Serial No. 09/541,376

a) a sample inlet for introducing a sample of the biological fluid into the medical diagnostic device;

b) a first capillary channel for conveying the sample from the sample inlet to a branching point;

c) a capillary connecting channel for conveying a first part of the sample from the branching point through a measurement area, in which is measured a physical parameter of the sample that is related to the at least one of the analyte concentration and property of the biological fluid, and, thereafter, to a first stop junction;

d) a capillary bypass channel for conveying a second part of the sample in a first direction from a first region, proximate to the branching point, to an overflow region, distal to the branching point, the first region having a capillary dimension in a second direction substantially perpendicular to the first direction;

e) a second stop junction in the capillary bypass channel, comprising a boundary region that

i) separates the first region and overflow region,

ii) has a second predetermined dimension in the second direction that is greater than the capillary dimension, and

iii) forms an angle that points toward the first region, whereby [any] excess sample that enters the sample inlet will pass through the second stop junction into the overflow region;

and wherein the second stop junction is weaker than the first stop junction such that the excess sample passes through the second stop junction into the overflow region only after sample has filled the measurement area.

SUB 217 A1

1. (Amended) The medical diagnostic device of claim 1, further comprising a suction device, in fluid communication with the first and second stop junctions, for drawing the sample from the sample inlet toward the first and second stop junctions.

SUB 2B7

3. (Amended) The medical diagnostic device of claim 2, in which the medical diagnostic device further comprises a first layer and second layer, at least one of which has a resilient region over at least a part of its area, separated by an intermediate layer, and in which

a) cutouts in the layers form, with the layers, the sample inlet, first capillary channel, capillary connecting channel, measurement area, and capillary bypass channel;

b) the suction device comprises a bladder that

i) is distal from the sample inlet,

ii) comprises at least a part of the resilient region, and

iii) has a volume that is at least about equal to the combined volume of the first capillary channel, measurement area, capillary connecting channel, and capillary bypass channel, and

A2

c) the first and second stop junctions comprise coinciding holes in the first, second and intermediate layers that are sandwiched by a third layer and a fourth layer.

SUB 2B7

4. (Amended) The medical diagnostic device of claim 3 in which at least one of the first and second layer is substantially transparent adjoining the measurement area, and the physical parameter that is measured is optical transmission.

A3

5. (Amended) The medical diagnostic device of claims 3 in which the physical parameter of the sample undergoes a change in the measurement area.

Serial No. 09/541,376

6. (Amended) The medical diagnostic device of claim 5 in which the measurement area contains a composition that facilitates blood clotting, the biological fuid is whole blood, and the property being measured is prothrombin time.

7. (Amended) The medical diagnostic device of claim 6 in which the composition comprises thromboplastin.

8. (Amended) The medical diagnostic device of claim 6 further comprising at least one additional fluidic path from the branching point to the bladder, each such additional path including a corresponding measurement area and stop junction.

9. (Amended) The medical diagnostic device of claim 8 in which a first additional path includes corresponding measurement area that overcomes the effect of an anticoagulant and a second additional path includes a corresponding measurement area that partially overcomes the effect of an anticoagulant.

10. (Amended) Trhe medical diagnostic device of claim 9 in which the corresponding measurement area of the fdirst additional path comprises thromboplastin, bovine eluate, and recombinant Factor VIIa and the corresponding measurement area of the second additional path comprises thromboplastin and bovine eluate.